

Case No.: MBLST-010A

## SECURE DISC CASE

### CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] Not Applicable

STATEMENT RE: FEDERALLY SPONSORED RESEARCH/DEVELOPMENT

[0002] Not Applicable

### BACKGROUND OF THE INVENTION

[0003] The present invention relates generally to cases used for storing discs, such as compact discs (CDs) or Digital Video Discs (DVDs), and more particularly to a secure disc case that includes a locking assembly that locks the disc in the case by capturing the disc via the disc aperture such that the case must be opened in order to remove the disc, but once opened, the disc is easily removed from the case.

[0004] Discs are commonly used for storing data. Such data may be textual data, audio data, graphical data, video data or some combination thereof. For example compact discs may be used for the storage of software application programs, raw data, games, music, etc. DVDs are used for the storage of movies or other video information, such as music videos or television programs.

[0005] Such disc are usually packaging in a case, such as a jewel case. The jewel case may be tagged with some sort of security device to deter shoplifting of discs. However, thieves have been able to circumvent such devices by removing the disc from the case and taking the disc, but leaving the case. In addition to the avoidance of setting off an alarm, taking the disc without the case may help to avoid detection as the disc alone is much less bulky than the disc in the case. Such thefts can be very costly to business that sell items, such as software, computer programs or movies on discs.

[0006] It has been discovered that discs can be removed from typical cases without even opening the case. Such removal without opening the disc case decreases the likelihood of catching shoplifters stealing discs as the opening of a case to remove the disc increases the likelihood that the shoplifter will be caught. Thus, there is a need for a secure disc case that requires the opening of the case in order to remove the disc.

[0007] There have been attempts to make a case which must be opened to remove the disc. For example, U.S. Patent No. 5, 788, 068 describes an apparatus for holding a compact disc. While cases such as the one disclosed in U.S. Patent No. 5,788,068 are more secure than prior disc cases, once opened, it is difficult for even the actual purchaser to remove the disc from the case. Such devices require the user to use two hands to remove the disc. Therefore, a need exists for a disc case that securely holds a disc such that the case must be opened to remove the disc but that allows for easy removal of the disc once the case is opened.

#### BRIEF SUMMARY OF THE INVENTION

[0008] A disc locking assembly for securely holding a disc having a disc aperture in a case is disclosed. The case has a bottom member including a bottom inner surface and a top member including a top inner surface. The case is movable between an open position and a closed position. The disc locking assembly captures the disc via the disc aperture so that the disc cannot be removed from the case when the case is in the closed position. However, once the case is in the open position, the disc can easily be removed from the case.

[0009] One embodiment of the disc locking assembly includes a first locking member configured to capture the disc via the disc aperture, and a second locking member being complementary to and engageable with the first locking member. Engagement of the first locking member to the second locking member and movement of the case to the closed position prevents removal of the disc from the case. Movement of the case to the open position facilitates disengagement of the first locking member from the second locking member such that the disc can be removed from the case.

[0010] The disc locking assembly may include a base member extending upwardly from the bottom inner surface and configured to support the disc with the first locking member being disposed upon the base member.

[0011] The device may include an arm with the second locking member disposed on the arm. The arm may be attached to the top inner surface. The arm may include two arm ends with the second locking member disposed therebetween and the two arm ends attached to the top inner surface along an edge of the top inner surface.

[0012] The bottom member has a bottom member first side and an opposing bottom member second side. The top member has a top member first side and an opposing top member second side. The bottom member first side and the top member first side are connected to each other along the bottom member first side and the top member first side. The bottom member second side and the top member second side come in contact with each other when the case is moved to the closed position and move away from each other when the case is moved to the open position. The two arm ends may be attached to the top member second side.

[0013] The device may be made of a polypropylene material.

[0014] Another embodiment of the device includes a twisting member, a pair of opposing locking members and a pair of connector members. The pair of opposing locking members are configured to extend upwardly from the bottom inner surface and to be positioned proximate to and on opposite sides of the twisting member. The pair of connector members connect the pair of locking members to the twisting member. The locking members are configured to capture the disc via the disc aperture and to have a default outward latched position operable to be moved to an inward unlatched position. The connector members are configured to wrap around the post to facilitate movement of the locking members between the default outward latched position and the inward unlatched position. Movement of the locking members to the inward unlatched position, capturing the disc via the disc aperture, returning of the locking members to the default outward latched position and movement of the case to the closed position prevents removal of the disc from the case, and movement of the case to the open position allows for movement of the

locking members to the inward unlatched position so that the disc can be removed from the case.

[0015] The disc locking assembly may also include a post configured to be attached and extend upwardly from the bottom inner surface at its distal end and to have the twisting member disposed on its proximal end. Alternatively, the twisting member may be a twisting post disposed on and extending upwardly from the bottom inner surface.

[0016] Yet another embodiment of the device includes a plunger housing, a pair of opposing locking members, a connector member, and a plunger. The plunger housing has a proximal end and a distal end and is configured to be disposed on and extend upwardly from the bottom inner surface from the distal end. The plunger housing has a hollow proximal end. The locking members are configured to be disposed on and extend upwardly from the bottom inner surface and to be positioned proximate to and on opposite sides of the plunger housing. The locking members are configured to have a default outward latched position operable to be moved to an inward unlatched position. The connector member is configured to connect the locking members through the plunger housing. A portion of the plunger housing above the connector member to the proximal end of the plunger housing forms a plunger recess. The plunger is configured to fit in the plunger recess such that depressing the plunger depresses the connector member in order to facilitate movement of the locking members from the default outward unlatched position to the inward unlatched position. Movement of the locking members to the inward unlatched position, capturing the disc via the disc aperture, returning of the locking members to the default outward latched position and movement of the case to the closed position prevents removal of the disc from the case, and movement of the case to the open position allows for movement of the locking members to the inward unlatched position so that the disc can be removed from the case.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0017] These as well as other features of the present invention will become more apparent upon reference to the drawings wherein:

- [0018] Figure 1 is a plan view of a first embodiment of a secure disc case;
- [0019] Figure 2 is a cross sectional view of the secure disc case of Figure 1 showing the case in an open position;
- [0020] Figure 3 is a cross sectional view of the secure disc case of Figure 1 showing the case in a closed position;
- [0021] Figure 4 is a partial perspective view of a second embodiment of a secure disc case;
- [0022] Figure 5 is a top view of a locking assembly of the secure disc case of Figure 4 showing locking members thereof disposed in an outward (latched) position;
- [0023] Figure 6 is a top view of the locking assembly of the secure disc case of Figure 4 showing the locking members thereof disposed in an inward (unlatched) position;
- [0024] Figure 7 is a partial perspective view of a third embodiment of a secure disc case;
- [0025] Figure 8 is a cross sectional view of the secure disc case of Figure 7 showing locking members disposed in an outward (latched) position; and
- [0026] Figure 9 is a cross sectional view of the secure disc case of Figure 7 showing the locking members disposed in an inward (unlatched) position.

#### DETAILED DESCRIPTION OF THE INVENTION

[0027] A security system for a disc 10 (such as a compact disc (CD) or digital viewing disc (DVD)) having a hole 12 is described herein. The security system securely holds the disc 10 inside a case 20. The case 20 can be any case sized and configured to hold a disc, for example, a plastic hinged case as shown herein or a jewel case. It will be appreciated that the system can be used for different sized discs, such as CDs or DVDs, laser discs or other sized discs.

[0028] The case 20 includes a bottom member 22 and a top member 32. The bottom member has a bottom inner surface 24 and a bottom outer surface 25. The top member 32 has a top inner surface 34 and a top outer surface 35. The bottom member 22 includes a bottom first side 26 and an opposing bottom second side 28. The top member 32 includes a top first side 36 and an opposing top second side 38. The

bottom member 22 of the case and the top member of the case are connected to each other along the bottom first side 26 and the top first side 36 via a connecting member, such as a side member 40 which acts as a hinge. When the case 20 is in its closed position, the bottom member 22 and the top member 32 are substantially parallel. When the case is in its closed position, the bottom second side 28 and the top second side 38 are adjacent.

**[0029]** As described in further detail below, the case 20 includes a locking assembly that captures the disc 10 via the disc aperture 12 so that when the case 20 is in its closed position, such as shown in Figure 3, the disc 10 can not be removed from the case 20 without opening the case 20. However, when the case 20 is moved from the closed (shown in Figure 3) position to the open position (shown in Figure 2), the disc 10 can easily be removed from the case 20.

**[0030]** In exemplary embodiments, all or part of the locking assembly is disposed on the bottom inner surface. A retaining structure, such as a raised wall 27 is disposed around the portion of the locking assembly disposed on the bottom surface 24. The retaining structure has a diameter just slightly larger than the disc 10 to be stored in the case 20. When the disc is positioned in the case, the disc is positioned within the retaining structure 27 and is supported by the bottom inner surface 24 or a base disposed thereon with the disc being held securely in place via the locking mechanism that captures the disc 10 via the disc aperture 12. Preferably, the retaining structure 27 includes recesses 29 which facilitate easy removal of the disc 10 from the disc case 20.

**[0031]** Figures 1-3 illustrate a first embodiment of a disc security system that captures the disc 10 via the disc aperture 12 as described above. The disc security system includes a locking assembly 50. The locking assembly 50 includes a first locking member 52 and a second locking member 56. The first locking member 52 extends upwardly from the bottom inner surface 24. Preferably, the first locking member 52 is disposed on a base that is disposed on the bottom inner surface 24. The base supports and elevates the disc 10 so that the disc is parallel to the bottom inner surface 24 with a small air gap therebetween. Alternatively, the first locking member 52 can be disposed directly on the bottom inner surface 24.

**[0032]** The first locking member 52 is sized and configured to fit within the disc aperture 12. With the case 20 in an open position, such as is shown in Figure 2, a disc 10 is over the first locking member 52, so that the disc is supported by either a base or the bottom inner surface 24. The first locking member 52 extends upwardly through the disc aperture 12. Preferably, the first locking member is sized and shaped such that the disc fits snugly on the first locking member 52 but can be easily removed (e.g., with one hand) as described in further detail below.

**[0033]** A second locking member 56 is sized and shaped to be complementary to and engageable with the first locking member 52. In exemplary embodiments, the second locking member is disposed on an arm 54. In the embodiment shown in Figure 1, the arm is arc-like in shape and the second locking member 54 is disposed proximate the center point of the arc. The arc-shaped arm has a first end 58 and a second end 60. In the embodiment shown, the first and second ends 58, 60 are attached to the case 20 proximate to the top member second side 38. It will be appreciated that the size, shape and placement of the arm may be different in various embodiments. For example, the arm could be secured proximate the top first side 36. The arm could be linear (e.g., rectangularly shaped) with the second locking member 54 secured to one end of the arm with the opposing end of the arm secured to the case 20. In yet other embodiments, there could be no arm and the second connecting member could be attached directly (or via a post) to the top inner surface 34 of the case.

**[0034]** When the case is closed, the first locking member 52 and the second locking member 54 are engaged and the disc 10 cannot be removed from the case 20 without opening the case 20. Preferably, the case also has an outer latching mechanism. Such mechanisms are present on existing disc cases.

**[0035]** Preferably, the first locking member 52 is sized and shaped such that the disc 10 fits snugly on the first locking member but can be easily removed (i.e., with one hand) when the case 20 is in an open position. Preferably, the first locking member 52 is sized and shaped so that the disc 10 will stay in place, e.g., will not fall out if the case 20 is turned over. In exemplary embodiments, the disc can be removed with one hand. For example, a user places a finger, such as the index finger in the

center of the first locking member 52. The side of the user's thumb is then placed along the edge of the disc 10. In exemplary embodiments, such as the one shown in Figure 1, the disc is supported by a base such that the disc is held above the bottom inner surface 24. There is a retaining structure 27 around the disc. The retaining structure 27 has recesses 29. The user places his thumb within one of the recesses 29 and moves his thumb in an upward direction in order to remove the disc 10.

[0036] Figures 4-6 show a second embodiment of the secure disc case. Like the first embodiment shown in Figures 1-3 and discussed above, the case 20 includes a bottom member 22 having a bottom inner surface 24 and a top member 32 having a top inner surface 34.

[0037] The secure disc case includes a locking assembly 70. The locking assembly 70 includes a twisting member 79, a pair of locking members 72, 76 and a pair of connecting members 74, 78. In exemplary embodiments, the twisting member 79 is disposed on a post 71 that extends upwardly from the bottom inner surface 24. The two locking members (a first locking member 72 and a second locking member 76) are disposed adjacent to and on opposite sides of the twisting member 79. Each of the locking members 72, 76 is connected to the twisting member 79 via a connector member 74, 78.

[0038] The default position of the locking members 72, 76 is an outward latched position as shown in Figure 5. The locking members 72, 76 can be moved to an inward unlatched position shown in Figure 6. As the locking members 72, 76 are moved from the default outward latched position (shown in Figure 5) to the inward unlatched position (shown in Figure 6), the connector members 74, 78 wrap around the twisting member 79. Preferably, the locking members 72, 76 are shaped and positioned so that placement of the disc aperture 12 over the locking members 72, 76 urges the locking members 72, 76 into the inward unlatched position. As the locking members 72, 76 are moved from their outward position to their inward position, the twisting member 79 twists and the connector members 74, 78 wind around the twisting member 79 as shown in Figure 6. After applying slight pressure to position the disc 10, the locking members 72, 76 return to their default outward latched position. As the locking members 72, 76 return to their default outward position, the



twisting member untwists (i.e., twists in the opposite direction) and the connector members unwind from around the twisting member 79. When the disc 10 is captured via the disc aperture 12 by placing the disc 10 over the locking members 72, 76 and allowing the locking members 72, 76 return to their default outward latched position shown in Figure 5, the disc 10 is held securely in the case 20. For example, if the case 20 turned over, the disc 10 will remain in place.

**[0039]** Once the disc 10 is captured via the disc aperture 12, the case 20 can be closed. Preferably, the case 20 also latches when it is in the closed position. When the case 20 is closed, the disc 10 cannot be removed from the case 20 without opening the case 20.

**[0040]** Once the case 20 has been opened, the user can easily remove the disc 10 with one hand by positioning one finger (e.g., the index finger) on the upper portion of the first locking member 72 and a second finger (e.g., the thumb) on the upper portion of the second locking member 76. The user then uses slight pressure to move the two locking members 72, 76 toward each other and into the inward unlatched position. When the locking members 72, 76 are in the inward unlatched position, the user can place a finger (on the same hand or on the other hand) along the edge of the disc and use light pressure to lift the disc 10 up.

**[0041]** Figures 7-9 illustrate a third embodiment of the secure disc case. Like the embodiments discussed above, the case 20 includes a bottom member 22 having a bottom inner surface 24 and a top member 32 having a top inner surface 34.

**[0042]** The secure disc case includes a locking assembly 80. The locking assembly 80 includes a plunger housing 81, two locking members 82, 84, a connector member 86 and a plunger 88. The plunger housing 81 is hollow or at least partially hollow and is disposed on and extends upwardly from the bottom inner surface 24 at its distal end. The two locking members (first locking member 82 and second locking member 84) are disposed adjacent to and on opposite sides of the plunger housing 81. The locking members are connected to each other via a connector member 86 that goes through a hollow portion of the plunger housing. A plunger recess 89 is formed in the plunger housing from just above the connector member 86 to the proximal end of the plunger housing. The plunger 88 is disposed within the plunger recess 89.

[0043] The default position of the locking members 82, 84 is an outward latched position as shown in Figure 8. The locking members 82, 84 can be moved to an inward unlatched position shown in Figure 9 by pressing down on the plunger 88. When the plunger 88 is depressed, the connector member 86 urges the locking members 82, 84 from their default outward latched position (shown in Figure 8) to an inward unlatched position (shown in Figure 9). Preferably, the locking members 82, 84 are shaped and positioned so that placement of the disc aperture 12 over the locking members 82, 84 urges the locking members 82, 84 into the inward unlatched position. After applying slight pressure to position the disc 10, the locking members 82, 84 return to their default outward latched position. Once in this position, the disc 10 is held securely in the case 20.

[0044] Once the disc 10 is captured via the disc aperture 12, the case 20 can be closed. Preferably, the case 20 also latches when it is in the closed position. When the case 20 is closed, the disc 10 cannot be removed from the case 20 without opening the case 20.

[0045] Once the case 20 has been opened, the user can easily remove the disc 10 with one hand by pressing the plunger 88 (as shown in Figure 9) to move the two locking members 82, 84 toward each other and into the inward unlatched position. When the locking members 82, 84 are in the inward unlatched position, the user can place a finger (on the same hand or on the other hand) along the edge of the disc and use light pressure to lift the disc 10 up.

[0046] The disc case and locking mechanism can be made of various materials or combinations of materials. In exemplary embodiments, the case and locking mechanism are made of a polypropylene material.

[0047] In exemplary embodiments, the disc case is manufactured to include a secure disc locking mechanism such as any one of the ones shown and described above. However, it will be appreciated that prior art (non-secure) disc cases may be retrofitted to include a secure disc locking mechanism such as any of the ones shown and described herein.

[0048] Additional modifications and improvements of the present invention may also be apparent to those of ordinary skill in the art. Thus, the particular combination

of parts described and illustrated herein is intended to represent only a certain embodiment of the present invention, and is not intended to serve as a limitation of alternative devices within the spirit and scope of the invention.